PWM & Analog Output Fan Speed

Affects: ASIC/1-8055 (FW155A3.1, 155B2.1), ASIC/1-6000

Date: 15 March 2005

Note No. TE-027

Several customers have requested an analog fan speed interface to the ECM motor. The ECM motor comes with a 0 to 10 Vdc interface module.

Pulse Width Modulated (PWM) Fan Speed control is available in the ASIC/1-8055 for Fan Personalities in firmware releases 155A3.1 and 155B2.1 which can be used with a PWM to Analog Voltage converter.

Analog Output for Fan Speed control is available in the ASIC/1-6000 for Fan Personalities.

ASIC/1-8055 PWM Fan Speed

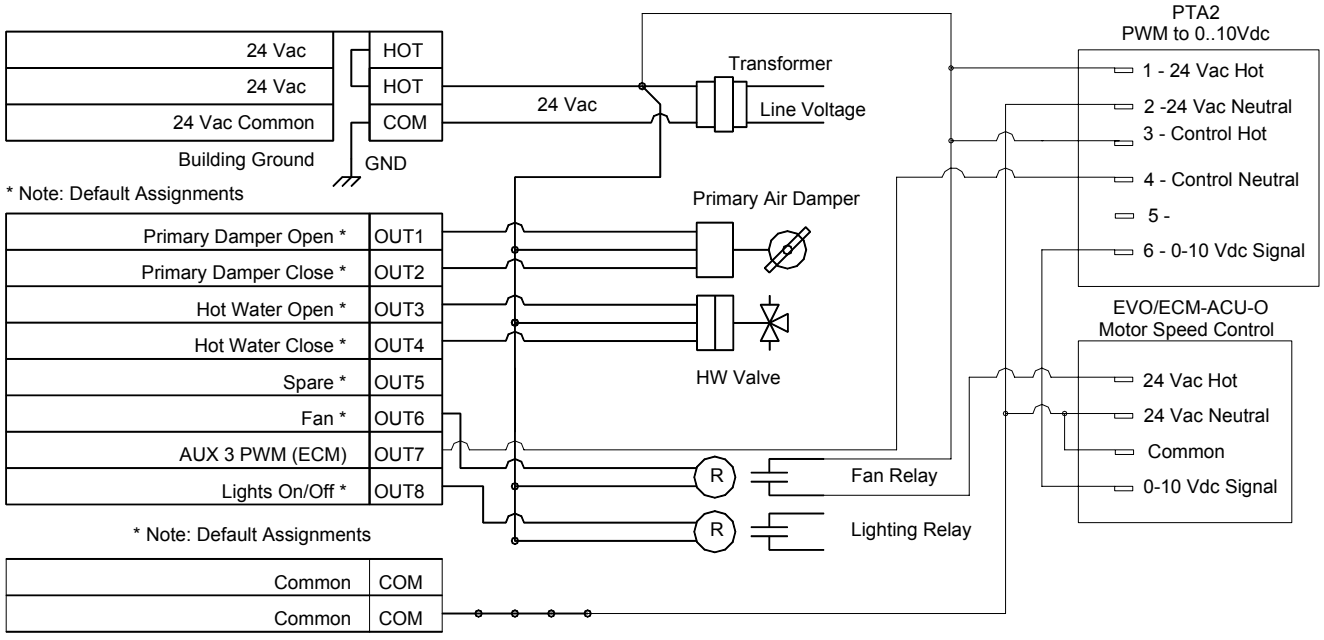
We have implemented Pulse Width Modulated (PWM) Fan Speed control in the ASIC/1-8055 for Fan Personalities in firmware releases 155A3.1 and 155B2.1. A pulse width modulated triac output can be used with a PWM to Analog Converter to generate a 0 to 10 Vdc analog voltage to drive the ECM motor interface module.

The PWM Fan Speed option is selected by setting Fan Speed PWM Enable to Yes, and setting the Aux 3 Output Mask to an unused output, typically Output 7. The Fan Speed Setpoint, 0…100%, is used to pulse modulate the output over a PWM Base Time (in 1/6 second units), typically 10 seconds. If the output is zero or off, the output will pulse on for 1/6 second. If the output is 100 % then it will pulse off for 1/6 second and be on for the remainder of the PWM Base Time.

ASIC/1-8055 Hardware Layout

The PWM to Analog Module, such as the PTA2, generates a 0 to 10 Vdc signal to the interface module, such as an EVO/ECM-ACU-O Motor Speed Controller for a GE ECM motor. The PTA2 is powered from the same 24 Vac transformer as the controller and is modulated with the triac output, OUT-7. The supply 24 Vac Common, 24 Vac Neutral, and EVO/ECM Common are all connected to controller Common.

In this example, when the Fan Output goes Off, the Fan Relay is used to remove power to the Motor Speed Controller thereby stopping the Fan.

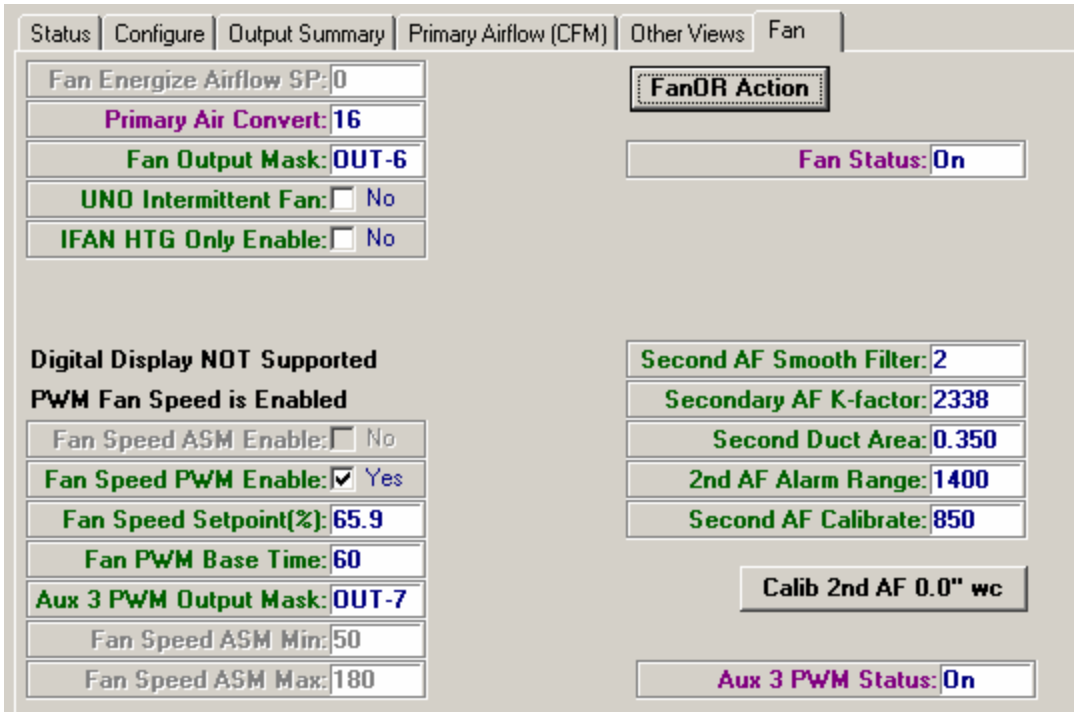


ASIC/1-8055 Expert Setup

Four parameters must be configured to enable PWM Fan Speed control for Intermittent or Constant Fan Personalities:

1. The Fan Speed PWM Enable is set to Yes;
2. The Fan PWM Base Time is set to the PWM Converter base time (1/6 second increments) [Default 60(10s)];
3. The Fan Speed Setpoint is set to a value between 0 and 100 % [Default 50%].
4. The Aux 3 PWM Output Mask must be assigned to an unused output [Typical OUT-7].

The Fan Output is typically on OUT-6. If it is an Intermittent Fan Personality then the Fan Energize Airflow Setpoint must be set to a reasonable value so that the fan will come on.



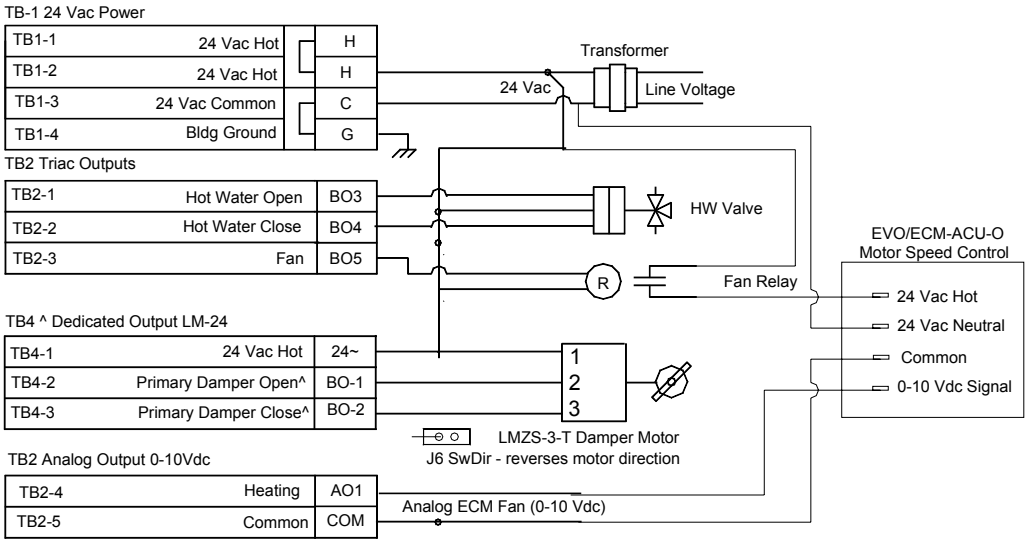
ASIC/1-6000 Analog Output Fan Speed

We have implemented an Analog Output for Fan Speed control in the ASIC/1-6000 for Fan Personalities.

The Analog Fan Speed Option is selected by choosing the Analog Output Assignment = 5, Fan Speed. It generates a 0 to 10 Vdc based on the Fan Speed Setpoint, 0..100%.. If the Fan is Off, then the output is zero.

ASIC/1-6000 Hardware Layout

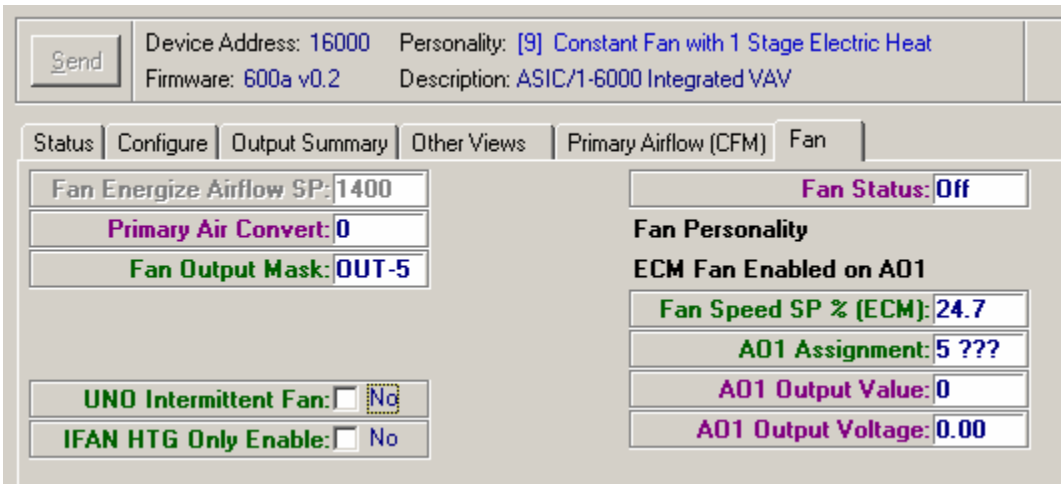
The Fan Speed Analog Output can be used with an EVO/ECM-ACU-O Motor Speed Controller to control a GE ECM motor. When the Fan Output goes Off, the Fan Relay is used to remove power to the Motor Speed Controller thereby stopping the Fan. The Fan Output is typically on BO-5.



ASIC/1-6000 Expert Setup

The Analog Output Assignment must be set to 5, Fan Speed to enable the feature. This sets the Analog Output Value to a percentage of the Fan Speed Setpoint.

When the fan is On, the analog output is driven to voltage which is a percentage of the output value. When the fan is Off, the analog output is set to zero, and the fan output is de-energized.



If you have any further questions please contact: ASI Controls Technical Support support@asicontrols.com, or call 925-866-8808